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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,098	04/07/2005	Xiaolan Ai	TIMK 8502US (W1)	2150
1688	7590	05/18/2006	EXAMINER	
POLSTER, LIEDER, WOODRUFF & LUCCHESI 12412 POWERS COURT DRIVE SUITE 200 ST. LOUIS, MO 63131-3615			KHUU, HIEN DIEU THI	
			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/531,098	AI ET AL.	
	Examiner	Art Unit	
	Cindy D. Khuu	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 5-16 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5-7,10-12,14-16,18 and 19 is/are rejected.
- 7) ☒ Claim(s) 8,9,13 and 20-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/7/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 14-16 and 18-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

With respect to claims 14-16 and 18-19, the methods of determining speed measurement of a target object. The claims do not produce any tangible results. The practical application of the claimed invention cannot be realized until the information determined is conveyed to the user. For the result to be tangible, it would need to output to a user, displayed to a user, stored for later use, or used in any tangible manner. Hence, the claims are treated as nonstatutory functional descriptive material (See MPEP Sec. 2106).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6-7 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Theile et al. (US 2001/0046042).

With respect to claim 1, Theile discloses a speed sensing system (Fig. 1) for measuring the speed of a target object (1), comprising:

a first differential speed sensor unit (2) operatively disposed adjacent a surface of said target object (1), said first differential speed sensor unit configured to generate a first differential signal (4) responsive to the passage of at least one random feature of said target object (Fig. 1; Paragraphs 31-32);

a second differential speed sensor unit (2) operatively disposed adjacent a surface of said target object (1) and displaced at a predetermined distance (L) from said first differential speed sensor unit (2) substantially in a direction of motion of the target object (1), said second differential speed sensor unit configured to generate a second differential signal (4) responsive to the passage of said at least one random feature of said target object (Fig. 1; Paragraphs 31-32); and

a signal processor (8) configured to receive said first and second differential signals, said signal processor further configured to apply a cross correlation analysis to determine a phase shift between said first and second differential signals, said phase shift inversely proportional to a speed of said target object (Paragraphs 88 and 96).

With respect to claim 6, Theile further discloses the speed sensing system wherein said first and second differential speed sensor units each include at least one optical sensor (Paragraph 97).

With respect to claim 7, Theile further discloses the speed sensing system wherein said signal processor is configured to filter direct-current components (6) from said first and second generated differential signals (4) such that said generated differential signals have a zero signal mean (Paragraph 36).

With respect to claim 10, Theile further discloses the speed sensing system wherein said first differential speed sensor unit and said second differential speed sensor unit are disposed within a common housing (Housing of Fig. 3).

With respect to claim 11, Theile further discloses the speed sensing system wherein said at least one random target feature is a surface feature of the target object (Surface of 1, Fig. 1).

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With respect to claim 12, Theile further discloses the speed sensing system wherein said at least one random target feature is a subsurface feature of the target object (Subsurface of 1, Fig. 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Theile et al. (US 2001/0046042) in view of Nelson et al. (US 2003/0052684).

With respect to claim 5, Theile teaches everything claimed, as applied above, with the exception an eddy current sensor. However, to do so is well known as taught by Nelson. Nelson teaches of a sensor system with an eddy current (Claim 21).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to apply a eddy current sensor as disclosed by Nelson due to the dependency on the condition of the surface of the object of which the speed is to be measured (Theile; Paragraph 97).

Allowable Subject Matter

Claims 8-9, 13 and 20-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, taken alone or in combination, fails to disclose or render obvious, which makes the following claims allowable over the prior art:

With respect to claim 8, the speed sensing system wherein said signal processor is configured utilize a Fast Fourier Transform-based algorithm to determine a cross correlation function between said generated differential signals, said cross correlation function defined by: $y(\sigma) = \int x_1(t + \sigma) x_2(t) dt$ where x_1 is said first generated differential signal; x_2 is said second generated differential signal; t is a signal time; and σ is a time delay between said generated differential signals.

With respect to claim 13, the speed sensing system where each of said first and second differential speed sensing units has an identical sampling rate; and wherein said identical sampling rate is substantially greater than a signal variation rate for said first and second differential speed sensing units.

With respect to claim 20, the speed sensing system wherein said first differential speed sensor unit includes first and second speed sensors spaced at least perpendicular to a direction of motion of the target object, each of said first and second speed sensors configured to generate a signal responsive to the passage of at least one feature of said target; wherein said second differential speed sensor unit includes third and fourth speed sensors spaced at least perpendicular to a direction of motion of the target object, each of said third and fourth speed sensor units configured to generate a signal responsive to the passage of at least one feature of said target object; wherein said first and third speed sensors are disposed along a common line parallel to the direction of motion of the target object; wherein said second and fourth speed sensors are disposed on a second common line parallel to the motion of the target object; wherein said first differential signal is representative of a difference between said signals generated by said first and second speed sensors; and wherein said second differential signal is representative of a difference between said signals generated by said third and fourth speed sensors.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cindy D. Khuu whose telephone number is (571) 272-8585. The examiner can normally be reached on M-F, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CHH 5/12/06


MICHAEL NGHIEM
PRIMARY EXAMINER